To obtain the relative values between the two sets of values (10) and (11), take $(6)\times1703-(9)\times131$, results in $9a=4d$. $\therefore$ $a=4$ and $d=9$, $b=5$ and $c=6$. These are prime to each other. $\therefore$ are the least values.

III. **Solution by COOPER D. SCHMITT, M. A., Professor of Mathematics, University of Tennessee, Nashville, Tennessee.**

The equations can be written: $50\left(\frac{1}{a}+\frac{1}{b}\right)=81\left(\frac{1}{c}+\frac{1}{d}\right)$,

$56\left(\frac{1}{c}+\frac{1}{a}\right)=75\left(\frac{1}{b}+\frac{1}{d}\right)$, $65\left(\frac{1}{b}+\frac{1}{c}\right)=66\left(\frac{1}{a}+\frac{1}{d}\right)$.

Let $1/a=x$, $1/b=y$, $1/c=z$, and $1/d=u$, and the equations become $50x+50y-81z-81u=0$; $56x-75y+56z-75u=0$; $66x-65y-65z+66u=0$.

Thus we have three equations with four unknown quantities.

By determinants $x:y:z:u::$

$$\begin{vmatrix}50, & -81, & -81\\ -75, & 56, & -75\\ -65, & -65, & 66\end{vmatrix} :- \begin{vmatrix}50, & -81, & -81\\ 56, & 56, & -75\\ 66, & -65, & 66\end{vmatrix} : \begin{vmatrix}50, & 50, & -81\\ 56, & -75, & -75\\ 66, & -65, & 66\end{vmatrix} :- \begin{vmatrix}50, & 50, & -81\\ 56, & -75, & 56\\ 66, & -65, & -65\end{vmatrix}$$

Evaluating the determinants, we have,

$x:y:z:u::(131)^2 90:(131)^2 72:(131)^2 60:(131)^2 40$,

or $x:y:z:u::90:72:60:40$.

Hence $1/a:1/b:1/c:1/d::90:72:60:40$,

or $a:b::c:d::4:5:6:9$;

whence $a=4$, $b=5$, $c=6$, $d=9$ are the lowest values.

Also solved by *A. H. HOLMES*.

PROBLEMS.

47. **Proposed by EDMUND FISH, Hillsboro Illinois.**

A rectangular field, whose length and breadth in rods are in whole numders, is enclosed with a fence and subdivided by fences on both diagonals, the total length of the fences is 2204 rods; required the sides and area.

48. **Proposed by SYLVESTER ROBBINS, North Branch Depot, New Jersey.**

The edges of a rectangular parallelopiped are within 1 of the proportion $2:3:9$, and they are $2x\pm1$, $3x$ and $9x$, $(2x\mp1)^2+(3x)^2+(9x)^2=$the diagonal squared$=94x^2\mp4x+1=\square$. To find four integral values for x.